

New Patent Claims

1. Surface-mounted LED arrangement with
 - a printed circuit board (1),
 - 5 -- a plurality of LEDs (2) that are arranged on a principal surface of the printed circuit board (1), and
 - a cooling member (3) that is connected to that side of the printed circuit board (1) facing away from the LEDs (2),characterized in that
 - 10 -- the printed circuit board (1) has its principal surface facing toward the cooling member (3) provided with a metallic layer (4), whereby the printed circuit board (1) electrically insulates the metallic layer (4) from the LEDs.
2. LED arrangement according to claim 1, characterized in that the metallic layer (4)
- 15 contains copper or other metal with good thermal conductivity.
3. LED arrangement according to claim 1 or 2, characterized in that the printed circuit board (1) is a flexible printed circuit board, particularly a flex board.
4. LED arrangement according to claim 3, characterized in that the printed circuit board (1) has its side facing away from the LEDs (2) applied onto a curved or singly
- 20 or multiply angled-off surface of a cooling member (3) or of a highly thermally conductive partial region of a device housing or of an automobile chassis or the like such that the plurality of LEDs (2) are arranged in a spatial form determined by the curved or singly or multiply angled off surface of the cooling member (3) or the like.
5. LED arrangement according to one of the claims 1 through 4, characterized in that
- 25 the metallic layer(4) comprises a meander-like lateral structure.

2 [sic]

6. LED arrangement according to one of the claims 1 through 5, characterized in that the cooling member (3) is composed of metal, particularly of copper or aluminum or a sheet metal.

5 7. LED arrangement according to one of the claims 1 through 6, characterized in that the surface of the cooling member (3) that faces away from the printed circuit board (1) is blackened and/or comprises cooling ribs and/or a surface roughening.

8. LED arrangement according to one of the claims 1 through 7, characterized in that the LEDs (2) are provided with lenses (4) [sic].

10 9. LED arrangement according to one of the claims 1 through 8, characterized in that the printed circuit board (1) is secured on the cooling member with a thermally conductive paste, a thermally conductive adhesive or a thermally conductive film.

10. Lighting device having an LED arrangement according to one of the claims 1 through 9.

15 11. Lighting device having an LED arrangement according to one of the claims 1 through 9, characterized in that

-- it is an exterior lighting of a motor vehicle such as a blinker, a tail light or a brake light, and

-- the cooling member (3) comprises a curvature adapted to the outside
20 contour of the motor vehicle or is a partial surface region of an automobile chassis.

2 [sic]

- it is an exterior lighting of a motor vehicle such as a blinker, a tail light or a brake light, and
 - the cooling member (3) comprises a curvature adapted to the outside
- 5 contour of the motor vehicle or is a partial surface region of an automobile chassis.

13. Lighting device having an LED arrangement according to one of the claims 1 through 10, characterized in that

- it is a rotating light, and
- 10 -- the cooling member (3) is a cylindrical hollow member to whose outside wall the printed circuit board (1) is applied.

14. Lighting device according to claim 11, characterized in that LEDs of the array that proceed axially parallel are electrically combined into lanes that can be successively circumferentially operated.

15 15. Lighting device having an LED arrangement according to one of the claims 1 through 3, characterized in that

- it is an exterior lighting of a motor vehicle such as a blinker, a tail light, a brake light or the like, and
 - the cooling member (3) comprises a curvature adapted to the outside
- 20 contour of the motor vehicle or is a partial surface region of an automobile chassis.

16. Lighting device according to one of the claims 1 through 13, characterized in that

- it is a rotating light, and
 - the cooling member (3) is a cylindrical hollow member to whose outside
- 25 wall the printed circuit board (1) is applied.

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